Paulus Xu Guanqi, Galileo Galilei and the Sun

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Pescara

Xu Guanqi 24/4/1562+8/11/1633
Galileo Galilei 15/2/1564+8/1/1642

- They never met each other
- Intermediaries: Jesuits fathers, namely Matteo Ricci (1552+1610)
- Baptism 1603
- 4 loves: Nation, People, Science, Church
- Gianni Valente, 30 giorni, (2016)

When the telescope arrived in China?

- Manuel Dias the Youngher (Yang Manuo) 1615 book Tian Wen Lüe (Explicatio spherae coelestis)
- In 1618 Johannes Terrentius 1576+1630 (Johann Schreck, Teng Yu-Han) elected in the Academy of Lincei after Galileo came in China with a telescope. The Emperor Chongzen (last of Ming dinasty) acquired that telescope in 1634
- In 1626, Johann Adam Schall von Bell (Tang Ruowang) published the Chinese treatise on the telescope known as the Yuan Jing Shuo (The Far-Seeing Optic Glass).
- J. Needham, Science And Civilisation In China

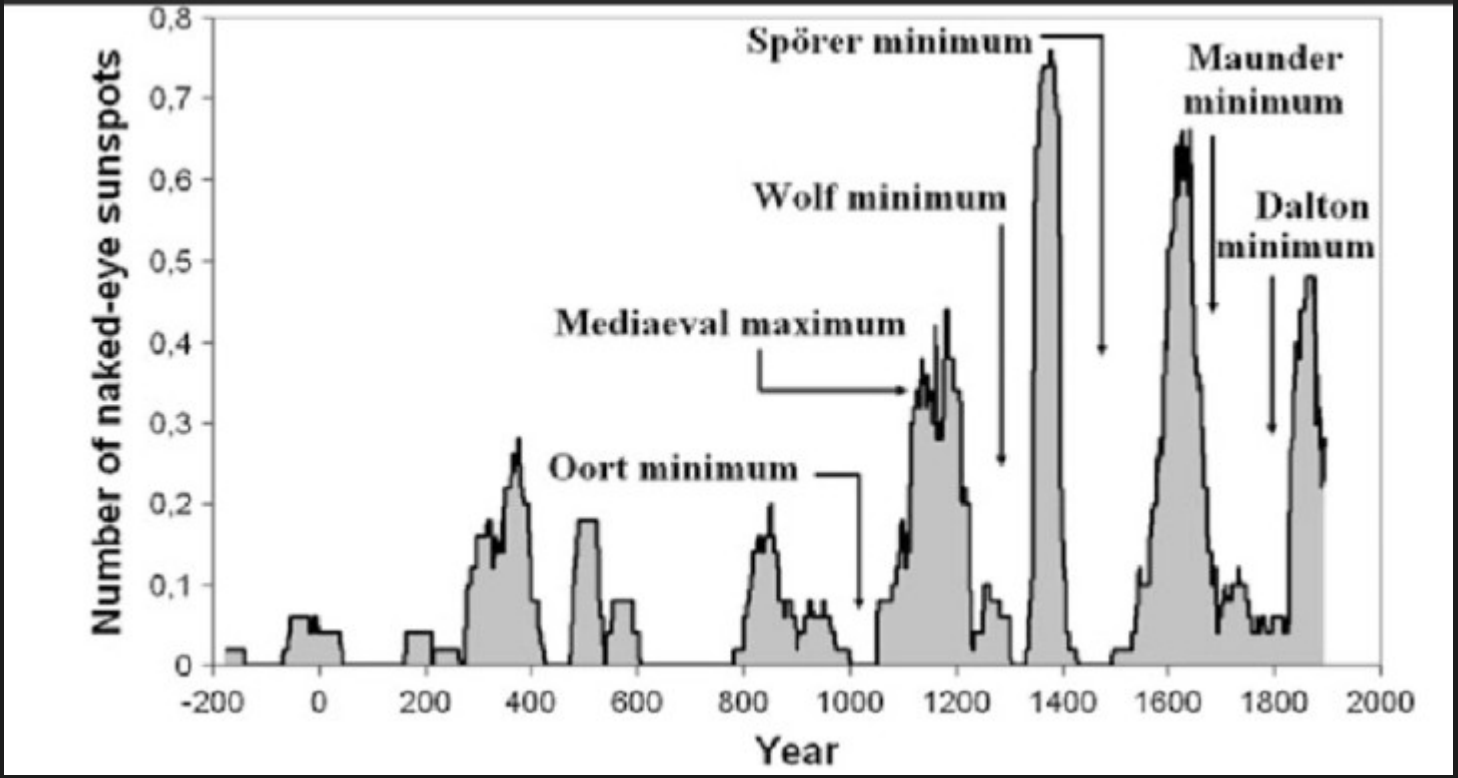
A. Schall von Bell
Yuan Ching Shuo
(1626)
the far seeing
optick
first chinese image
of a telescope

1628 Terrentius describes the sunspots, as observed with the telescope
Tshé Thien Yo Shuo (Brief Description of the Measurement of Heaven)

- Chinese observed occasionally the sunspots since 12 centuries

Early sunspot drawings from naked-eye observations. Left panel: drawing by John of Worcester, observed in 1128 CE (adapted from Vaquero and Vázquez 2009). Right panel: undated drawing from Tiānyuán Yùlì Xiángyìfù, manuscript 305-257 at Naikaku Bunko, Books of Shoheizaka Gakumonjo, in the National Archives of Japan [in Chinese], involved in an imperial manual of Chinese astro-omenological divination compiled in 1424–1425 (adapted from Hayakawa et al. 2017)

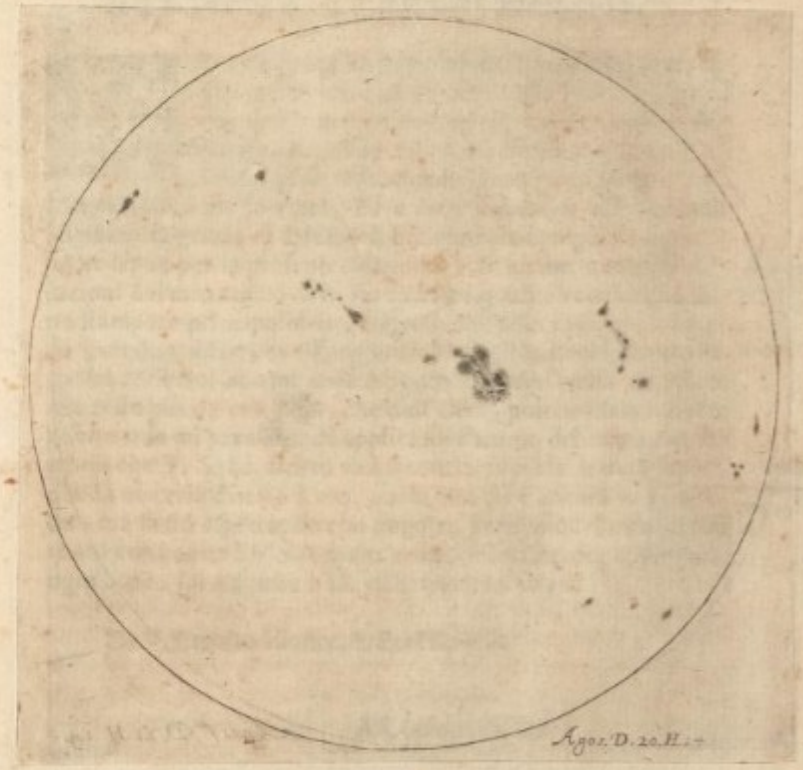
Naked eye sunspots



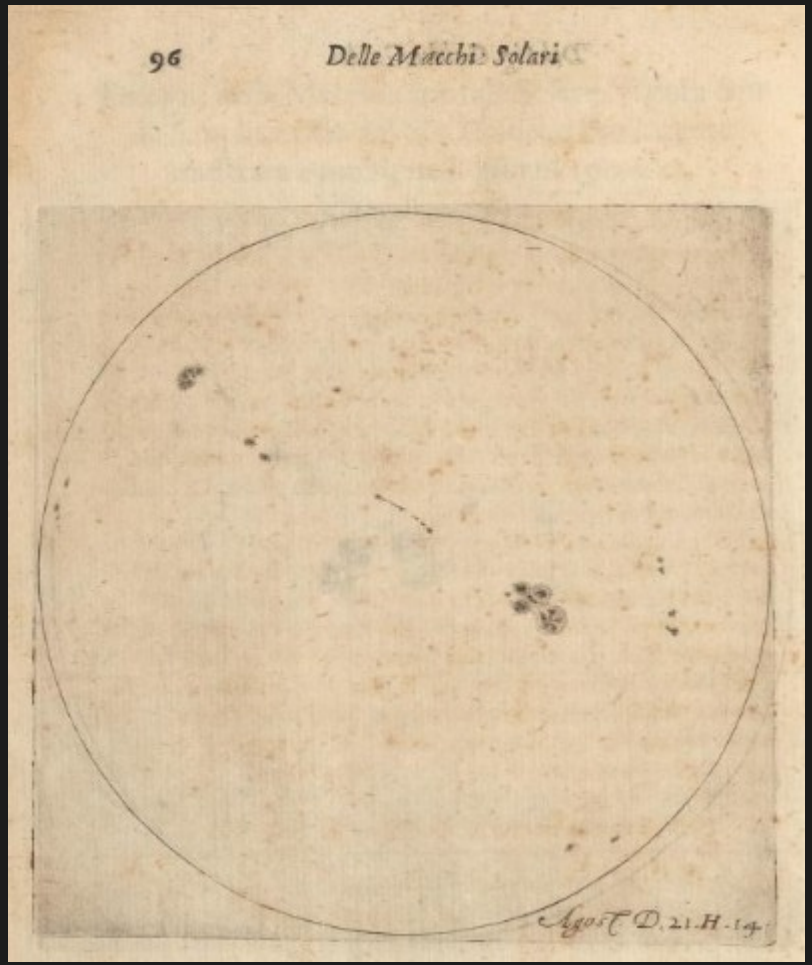
A plot showing the incidence of naked eye sunspots and intervals with low to zero sunspot activity (after Vaquero et al. 1997)

Galileo (1613)
Istoria e dimostrazioni intorno alle macchie solari e loro accidenti

Disegni della Macchia grande Solare, veduta con la semplice vista dal Sig. Galilei, e similmente mostrata a molti; nelli giorni 19.20.21. d'Agosto 1612.



21 August 1621



Galileo includes bibliography of a naked eye sunspot: Einhard, Vita Caroli 32

Galileo was decisive for the discovery of sunspots

- After the Sporer minimum (1460-1550) he was the first to clearly detect sunspots
- Even Kepler (1607) missed to understand their “solar nature”
- C. Sigismondi, 2025 (subm. to Histories 2025)

The Eclipse of 21 June 1629 in Beijing

- Jesuits Astr. 3:2 Chinese/Muslim Astronomy
- JAHH23(2)327.pdf (2020)
- Errors in time 15 min
- Without telescopes
- Jesuits fit better the observations
- J: 2 fen (0.2) vs Ch: 3 fen 24 miao (0.324)
- NASA: 1 fen 68 miao (0.168)

First observations of eclipses with telescopes: 1631

- Guan-Qi Xu, et al., Xin-fa Suan-shu (Books on new calculating methods), chap. 2, 11(b)–13(b). This book was originally compiled on the basis of European astronomy from 1628 to 1644.

Errorbars from 0.05 (5 miao, unaided eye) to 3 miao (small “low quality” telescopes, used up to 1750)

- Eclipse Observations Made by Jesuit Astronomers in China: A Reconsideration - Yunli Shi, 2000